

## WHAT IS CLAIMED IS:

1. A single crystal pulling apparatus for a metal fluoride, comprising:

- 5 a chamber constituting a crystal growth furnace;  
a crucible provided in the chamber and filling a molten solution of a single crystal manufacturing material;  
a melting heater provided to surround the crucible;  
a vertically movable single crystal pulling bar

10 including a seed crystal on a tip and coming in contact with the molten solution of the single crystal manufacturing material filled in the crucible;

a heat insulating wall provided in the chamber to surround at least a peripheral side portion of a single  
15 crystal pulling region in an upper part of the crucible;

a ceiling board for closing an opening portion of an upper end in an upper part of the heat insulating wall; and

a single crystal pulling chamber surrounded by the heat insulating wall and the ceiling board,

20 wherein the ceiling board is provided with at least an inserting hole for inserting the single crystal pulling bar, and

a coefficient of thermal conductivity in a direction of a thickness of the ceiling board is 1000 to 50000

W/m<sup>2</sup>· K.

2. The single crystal pulling apparatus for a metal fluoride according to claim 1, wherein a coefficient of thermal conductivity in a direction of a thickness of the heat insulating wall is 100 W/m<sup>2</sup>· K or less.
3. The single crystal pulling apparatus for a metal fluoride according to claim 1 or 2, wherein the ceiling board is a graphite plate.
4. The single crystal pulling apparatus for a metal fluoride according to any of claims 1 to 3, wherein the ceiling board is positioned in a higher place than an upper end of the crucible by 50 to 500% of a maximum inside diameter of the crucible.
5. The single crystal pulling apparatus for a metal fluoride according to any of claims 1 to 4, wherein a total opening area of apertures formed on the ceiling board is 5 to 60% of an opening area of an upper end in a circular enclosure of the heat insulating wall.
6. The single crystal pulling apparatus for a metal

fluoride according to any of claims 1 to 5, wherein the metal fluoride is calcium fluoride.

7. The single crystal pulling apparatus for a metal fluoride according to any of claims 1 to 6, wherein the crucible has a maximum inside diameter of 11 cm or more.